REMARKS

Reconsideration and allowance of the subject patent application are respectfully requested.

Applicants acknowledge with appreciation the indication that claims 5 and 12 contain allowable subject matter. These claims have been written self-standing independent form.

Claims 1-4, 6-11, 13 and 14 were rejected under 35 U.S.C. Section 102(b) as allegedly being anticipated by Kondo (U.S. Patent No. 5,576,772). Applicant traverses this rejection.

In Kondo, motion vectors are obtained respectively in the first hierarchical stage, the second hierarchical stage and the third hierarchical stage, in which the resolution or accuracy of motion vectors differs (see Figures 9A-9C). More specifically, the motion vector of the third hierarchical stage is outputted from determining circuit 18 (see col. 12, lines 43-51 and Figure 11B); the motion vector of the second hierarchical stage is outputted from determining circuit 19 (see col. 13, lines 4-10 and Figure 11B); and, the motion vector of the first hierarchical stage is outputted from determining circuit 20 (see col. 13, lines 21-22 and Figure 11B).

The motion vector of the third hierarchical stage is doubled by a multiplier 22 and added to the motion vector of the second hierarchical stage by an adder 23. This summed motion vector is doubled by a multiplier 25 and added to the motion vector of the first hierarchical stage by an adder 26. Finally, the resultant motion vector is outputted from the terminal 27 (see Figure 11B). Thus, the motion vectors of all the hierarchical stages are used to obtain the resultant motion vector.

As shown by way of illustration without limitation in the specification of the subject application, a plurality of generating devices (20, 21) generate movement vectors (V1, V2) at different search ranges and accuracies with respect to a plurality of macro blocks (M). Then, a selecting device selects one of the movement vectors in accordance with characteristics of the image in each macro block, and outputs the selected movement vector. As noted above, in Kondo, the motion vectors of all the hierarchical stages are used to obtain the resultant motion vector. Kondo does <u>not</u> disclose a selecting device for selecting one of the movement vectors generated by a plurality of generating devices as called for in independent claims 1 and 7 or a selecting process of selecting one of the movement vectors generated by a plurality of generating

processes as called for in independent claims 8 and 14. For at least these reasons, Kondo cannot anticipate claims 1, 7, 8, and 14 and the claims that depend therefrom.

New claims 15-24 are added for the Examiner's consideration. The subject matter of these new claims is fully supported by the original disclosure and no new matter is added. Independent claim 15 calls for a selecting device and independent claim 20 calls for a selecting process. These claims are believed to be allowable over Kondo for reasons similar to those advanced above. The remaining claims depend from either claim 15 or 20 and are likewise believed to be allowable.

All pending claims are believed to be allowable and early notification to that effect is respectfully requested.

Respectfully submitted,

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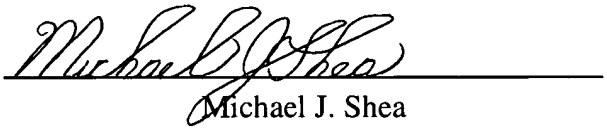
By: 

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Version marked to show changes made

Claims 5 and 12 have been amended as follows:

5. (Amended) A movement vector generating apparatus for generating a movement vector for a movement compensation by means of an inter-frame prediction [according to Claim 2], when encoding a preset image information including an image of a plurality of frames by using the movement compensation, said apparatus comprising:

a plurality of generating devices each for generating the movement vector corresponding to a search range and a search accuracy between one frame and another frame, for each pixel block which is located within said one frame respectively in the image information and includes a plurality of pixels, said generating devices respectively using search ranges different from each other and search accuracies different from each other; and

a selecting device for selecting one of movement vectors generated by said generating devices, in accordance with characteristics of the image in said each pixel block, and then outputting the selected movement vector corresponding to said each pixel block,

wherein said generating devices comprise:

a first generator for generating a first movement vector, with a preset first range as the search range; and

a second generator for generating a second movement vector at the search accuracy lower than that of the first movement vector, with a preset second range wider than the first range as the search range, and

wherein said selecting device comprises:

a first adding device for adding together absolute values of differences between respective one of the pixels in the pixel block and its corresponding pixel in the frame targeted by the movement compensation, as for all of the pixels in the pixel block, in said first generating device, to generate a first absolute value sum;

a second adding device for adding together absolute values of differences between respective one of the pixels in the pixel block and its corresponding pixel in the frame targeted by the movement compensation, as for all of the pixels in the pixel block, in said second generating device, to generate a second absolute value sum; and

a standardizing device for standardizing the generated first and second absolute value sums, respectively,

said selecting device comparing the standardized first absolute value sum with the standardized second absolute value sum, outputting the first movement vector as the selected movement vector if a difference between the standardized first absolute value sum and the standardized second absolute value sum is not greater than a predetermined threshold which is set in advance to detect a difference between the first movement vector and the second movement vector at a high accuracy, and outputting the second movement vector as the selected movement vector if the difference between the standardized first absolute value sum and the standardized second absolute value sum is greater than the predetermined threshold.

12. (Amended) A movement vector generating method of generating a movement vector for a movement compensation by means of an inter-frame prediction [according to Claim 9], when encoding a preset image information including an image of a plurality of frames by using the movement compensation, said method comprising:

a plurality of generating processes each for generating the movement vector corresponding to a search range and a search accuracy between one frame and another frame, for each pixel block which is located within said one frame respectively in the image information and includes a plurality of pixels, said generating processes respectively using search ranges different from each other and search accuracies different from each other; and

a selecting process of selecting one of movement vectors generated by the generating processes, in accordance with characteristics of the image in said each pixel block, and then outputting the selected movement vector corresponding to said each pixel block,

wherein said generating processes comprise:

a first generating process of generating a first movement vector, with a preset first range as the search range; and

a second generating process of generating a second movement vector at the search accuracy lower than that of the first movement vector, with a preset second range wider than the first range as the search range, and

wherein said selecting process comprises:

a first adding process of adding together absolute values of differences between respective one of the pixels in the pixel block and its corresponding pixel in the frame targeted by the movement compensation, as for all of the pixels in the pixel block, in said first generating device, to generate a first absolute value sum;

a second adding process of adding together absolute values of differences between respective one of the pixels in the pixel block and its corresponding pixel in the frame targeted by the movement compensation, as for all of the pixels in the pixel block, in said second generating device, to generate a second absolute value sum; and

a standardizing process of standardizing the generated first and second absolute value sums, respectively,

said selecting process comparing the standardized first absolute value sum with the standardized second absolute value sum, outputting the first movement vector as the selected movement vector if a difference between the standardized first absolute value sum and the standardized second absolute value sum is not greater than a predetermined threshold which is set in advance to detect a difference between the first movement vector and the second movement vector at a high accuracy, and outputting the second movement vector as the selected movement vector if the difference between the standardized first absolute value sum and the standardized second absolute value sum is greater than the predetermined threshold.